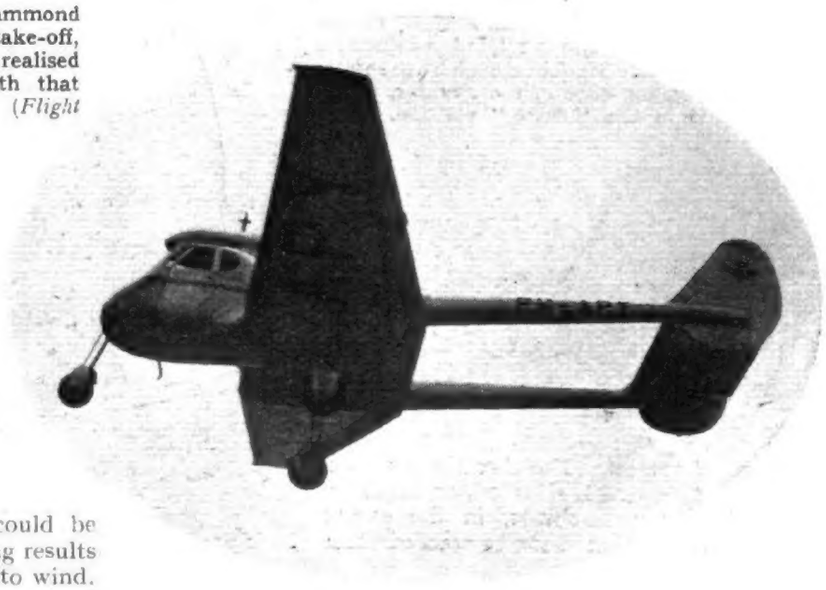

Though unconventional, the appearance of the Hammond is not displeasing. In the heading picture of the take-off, the amount of undercarriage movement can be realised when the position of the wheels is compared with that in one of the two sketches on the following page. (*Flight* photograph.)

The Stearman-Hammond in England : Simplified Control System for All-metal Pusher with Tricycle Undercarriage

as a passenger or as a pilot, so no first-hand impressions can be given. However, Mr. Steensma showed that it was at least as manœuvrable as any other light aeroplane in the air and a great deal more manœuvrable on the ground; that sink or glide-in landings could be made with impunity; and that a cross-wind landing results in neither a trailing wing-tip nor a sharp swing into wind. The wind was blowing at 10 m.p.h. or probably more, and the machine has no movable rudder, so that it was impossible for the pilot to cheat by providing artificial drift. The undercarriage just takes it, though with little keel surface one would expect the machine to swing down-wind without the positive control provided by the steerable nose-wheel once it is firmly on the ground.

In last week's issue the special characteristics of the tricycle undercarriage—foolproof landings and directional stability on the ground—were described and explained, so we may pass straight on to the control system of the Hammond. This, with its simplification, would not be a practical proposition, needless to say, without the tricycle arrangement, so that some undercarriage comment will be necessary. It will suffice for the moment to say that this landing gear has a stroke of 18 inches and will accommodate a vertical velocity of 20 feet a second—which is a good deal faster than the semi-stalled sinking speed of the machine and is equivalent to a free drop of 6½ feet or so.

As already explained, the Hammond has no controllable rudder. Instead there are two fixed but adjustable fins which are normally arranged with a slight splay-out to provide directional stability in the air. Turns are made on the differential ailerons and the elevator alone. Presumably the sort of jagging movement usually given to the ailerons in order to lift a wing after a bump is not likely to produce a turn of more than a degree or two, and the only difficulty likely to be experienced would be while flying on the instruments alone. Mr. Steensma told us that the technique of accurate two-control blind flying is, in any case, soon mastered.

In the side-by-side cabin there are five major controls, only one of which is used in ordinary flight—the wheeled control column. This is of the swing-over type and operates in the usual way except that, when taxi-ing, the aileron wheel is used as when driving a car, since its movement turns the nose-wheel. Incidentally, this nose-wheel movement has some slight action on the flying characteristics, the drag tending to assist the turn in

In spite of its high position the Menasco engine is very neatly cowled (left). The structure on the roof air-scoop carries the pitot head and venturi. Below is a sketch showing the control and instrument layout; this sketch, when seen beside the photographs on the opposite page, also gives an idea of the range of forward vision provided for the occupants.